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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,775	12/06/2001	Everett F. Simons	PARI/0015/US	2736

7590 04/09/2004

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EXAMINER

ORTIZ, ANGELA Y

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 04/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

my

Office Action Summary	Application No. 10/010,775	Applicant(s) SIMONS, EVERETT F.	
	Examiner Angela Ortiz	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-10 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-10 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Jin et al., USP 5,618,189.

The cited reference teaches as conventional the forming of a high-aspect-ratio solder medium for circuit interconnection, including the steps of using magnetic field alignment in combination with solder particle fusion. A magnetic field is used to create a laterally-spaced vertical chain of magnetic particles in a viscous matrix material. The magnetic spheres are coated with solder prior to being mixed into the matrix material, and the composite material is cured. The cured medium is then heated to fuse the spheres in the aligned configuration. See col. 5, lines 5-55.

The use of a low melting point alloy is deemed inherent within the reference as the art teaches the use of solder, which melts at low temperatures.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 8-10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jin et al., USP 5,045,249 (of record) in view of Jin et al., USP 5,618,189.

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The cited primary reference substantially teaches the basic claimed process of forming a composite medium useful in electrical interconnection applications, wherein a plurality of magnetic particles are provided and aligned within a nonconductive medium. The detailed process steps include providing magnetic particles, which may be coated with a metal alloy, within a nonconductive elastomer material. A magnetic field is applied to the mixture to align the particles therein in the form of columns. The material mixture is heated and cured at a temperature range that includes 100 degrees C to fix the conductive pathways therein. See col. 2, line 7 to col. 3, line 25.

The cited reference does not set forth the specific, positively set forth step of heating to fuse a low melting point alloy as claimed.

The added reference teaches as conventional the forming of a high-aspect-ratio solder medium for circuit interconnection, including the steps of using magnetic field alignment in combination with solder particle fusion. A magnetic field is used to create a laterally-spaced vertical chain of magnetic particles in a viscous matrix material. The magnetic spheres are coated with solder prior to being mixed into the matrix material, and the composite material is cured. The cured medium is then heated to fuse the spheres in the aligned configuration. See col. 5, lines 5-55.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to fuse the coating as claimed in view of the added reference, when performing the process set forth in the primary reference, to form the desired columns as set forth and depicted in the applied references.

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With respect to claims 9-10, note that the components set forth in the applied reference are supplied with contact pads and metal coating to form electrical pathways through the medium. See col. 1, lines 45-55; col. 2, lines 1-15; col. 3, lines 8-10.

With respect to claim 13, note that the primary reference cures at 100 degrees C, and the secondary reference teaches the use of solder with a melting temperature range of 100 to 250 degrees C. It would have been obvious to fuse at temperatures less 140 degrees C as such a range is within the melting temperature range of the material used and the oven curing temperature used.

Response to Arguments

Applicant's arguments with respect to claims 8-10, 13 have been considered but are moot in view of the new ground(s) of rejection.

Note that the arguments regarding the melting temperature of gold and silver are unpersuasive because the parameters of the materials used are not disclosed; note also that alloys used will normally have a lower melting point than pure metals, and with alloys, the percentage of the metal will affect the melting temperature of the resulting component. The newly applied art teaches the conventionality of the argued step of fusing.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP's 5324603; 5522962; 5975922; 6290868.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela Ortiz whose telephone number is 571-272-1206. The examiner can normally be reached on Monday-Thursday 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Angela Ortiz
Primary Examiner
Art Unit 1732

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